

NASA Hqs., PY/University Affairs



JUL 21 1972

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS 77058

OFFICE OF
UNIVERSITY AFFAIRS

E72-10012
T.M.X. 68669

REPLY TO
ATTN OF: TF2

JUL 17 1972

TO: Goddard Space Flight Center
Attn: 430/ERTS Nimbus Project Office

FROM: TF2/Manager, Applications Office

SUBJECT: ERTS-A Investigation ER-600, R. Bryan Erb, NASA/MSC,
ID # NA 347

The task definition for ERTS-A Investigation (ER-600) is enclosed herewith and is agreed to by the Principal Investigator.

Since submitting the original proposal further planning and discussions with user agencies have resulted in some modifications to the investigation which we hereby submit. The nature of these modifications is largely by way of additional objectives and better definition of the original plan. No change is required in the cost of the investigation.

The original proposal suggested the conduct of at least two applications tasks with user agencies and cited thermal studies in Trinity Bay and timber management in the Sam Houston National Forest (paragraph (4), original Statement of Work). The amended Statement of Work, dated July 1972, replaces these two applications tasks with the following tasks:

a. An assessment of the utility of the ERTS-A data to detect, identify, locate and measure features of applications interest in several target areas, including:

- (1) Forest targets (in the Sam Houston National Forest)
- (2) Range, grass and brush targets
- (3) Water and coastal targets (including Trinity Bay)
- (4) Urban targets
- (5) Crop targets (including two outside HATS)

b. A cooperative program with the Agricultural Stabilization and Conservation Service of USDA as a data utilization experiment. This experiment will evaluate the utility of ERTS-A and aircraft data to identify crop species, categories of land use, field boundaries and to estimate crop and land use acreages.

Both conventional photo-interpretation techniques and automatic data processing pattern recognition techniques will be applied to these tasks

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(E72-10012) ERTS-A INVESTIGATION ER-600
R.B. Erb (NASA) 17 Jul. 1972 8 p CSCL 08D

N72-28318

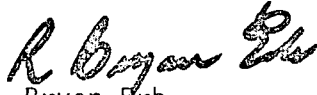
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as well as to the land use determinations.

The study sites for the joint data utilization experiment with the ASCS are all outside the Houston Area Test Site. ERTS coverage for these areas will be acquired through ASCS and no additional test site locations will be specified by this office. Aircraft underflight support for those sites outside HATS will be coordinated through the aircraft program at MSC. The standing order submitted previously is still correct and the DCS requirements (Exhibit D) are also correct.

I understand that execution of this Task Description will be considered consumation of a funding agreement. Investigation plans and reports will be provided as specified.

This opportunity to participate in the ERTS-A analysis is sincerely appreciated and we will do our best to make this investigation a success.

A handwritten signature in dark ink, appearing to read "R. Bryan Erb". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

R. Bryan Erb

3 Enclosures
Task Definition
Amended Statement of Work
Order Form & DCS

TASK DEFINITION

1. The ERTS Project will provide to the Principal Investigator or his designee the ERTS-A data as indicated on attached standing order form relative to proposal ER-600. Any additional data the investigator may require can be order retrospectively by using the Data Request Form.
2. The Principal Investigator, R. Bryan Erb, ID No. NA 347, will evaluate this data in conformance with the attached Statement of Work.
3. If supporting aircraft coverage is required, it will be provided as indicated in the MSC ERTS-A Aircraft Support Plan for this specific investigation. Right of rescheduling is reserved by the MSC Earth Observations Aircraft Support Office to meet contingencies of equipment availability, weather, etc.
4. The Principal Investigator will submit a Data Processing Plan within three months of receipt of first ERTS-A data. Periodic technical progress reports and final report will be submitted in conformance with the following schedule and attached specification S-250-P-IC.

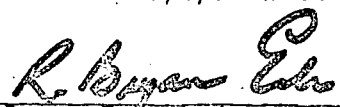
Five copies of Type I progress report shall be prepared and submitted on two month intervals. The reports are due within ten days after the end of the period being reported. The first period shall end on August 31, 1972. Type III (Final Report) will be submitted to ERTS Project Office within 30 days of completion of contract period. Type I reports shall include a statement of accrued costs to date and a projection, by quarter, of costs for balance of the period of performance.

5. The investigation shall be funded by suballotment under Job No. 430-641-14-07-50 in amounts agreed to from time to time between the Principal Investigator and the Technical Monitor and contingent upon availability of funds.

For planning purposes, the maximum funding for this program to completion shall be 200K in FY73.

The starting date of this investigation shall be 7/1/72 with a duration of 12 months.

Signature


R. Bryan Erb, Principal Investigator

STATEMENT OF WORK

The major objective of this investigation will be to determine the individual and combined roles of ERTS spacecraft, aircraft, and ground capabilities based on their contributions to the data gathering mission, in order to assist in the definition and development of the technology needed for these systems to serve an integrated Earth Resources Survey Program.

The specific objectives are as follows:

(1) Using the ERTS RBV and MSS imagery, determine the number of land use categories which can be confidently determined from this data using conventional photo-interpretation techniques.

(2) Using computer compatible magnetic tapes from the RBV and MSS systems, determine the degree to which automatic data processing pattern recognition techniques can be applied to the land use classification process.

(3) Using aircraft and ground truth data, relate the findings from the above two tasks to that land use present at the time of the spacecraft overflights.

(4) Assessing the utility of the ERTS-A data to detect, identify, locate and measure features of applications interest in several target areas including:

- (a) Forest targets (in the Sam Houston National Forest)
- (b) Range, grass and brush targets
- (c) Water and coastal targets (including Trinity Bay)
- (d) Urban targets
- (e) Crop targets (including two outside HATS)

(5) Conducting a cooperative program with the Agricultural Stabilization and Conservation Service of the U. S. Department of Agriculture as a data utilization experiment. This experiment will evaluate the utility of ERTS-A and aircraft data to identify crop species, categories of land use, field boundaries and to estimate crop and land use acreages.

The technical objectives for utilization of ERTS data are dependent on the development of the ERTS analytical capabilities discussed in the Applications Office General Plan (Figure 3). This test site is to be used

not only to conduct user applications with specific local, state, or Federal agencies, but also to study and define some of the systems problems that will be associated with the implementation of an operational remote sensing system at some time in the future. This investigation is a long-term project that will make direct applications from the data acquired during the ERTS A & B and Skylab missions and will assist in the definition of future manned and unmanned earth observations systems and missions in both spacecraft and aircraft. These objectives are to be discussed in depth in the final report.

ERTS 1 STANDING ORDER FORM

NDPF USE

D _____
N _____
ID _____
AA _____
REP _____

DATE 3/7/72

PRINCIPAL INVESTIGATOR R. Bryan Ebb

TELEPHONE NO. 713-483-4623

SHIP TO: R. Bryan Erb (NAME)

NASA Manned Spacecraft Center

Code TF2

(STREET)
Houston, Texas 77058

(CITY) (STATE) (ZIP)

CATALOGS DESIRED

STANDARD ☒ U.S. ☐ NON-U.S.

DCS A

MICROFILM ☒ U.S. ☐ Non-U.S.

CHECK IF ADDRESS IS NEW ☐[illegible]

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1. NO. 400 INVESTIGATOR ERL SCIENCE MONITOR MSC TECH. MONITOR SPRINGER

2. RECD 23 MAR 72 VIA: ☐ LETTER ☐ TELETYPE ☒ FORM 192
3. REQUESTING CARRIER: ☐ INVESTIGATOR ☐ SCIENCE MONITOR ☐ TECH MONITOR

4. NEGOTIATION AGREEMENT POSITION:
5 FLIGHTS: 3 P-3/C-130 (TRINITY - GALVESTON Bay - Spm Houston Nat'l Fuzes) 1 in file, 2 in file, 72
2 RB-57 (HATS) 1 in May '72, 1 in Jan to Dec '72

5. RANGE(S) REQUESTED:
RB-57 - 5 FLIGHTS: ONE FLIGHT EACH QUARTER
1C-130 - 5 FLIGHTS: ONE FLIGHT EACH QUARTER



6. COMMENTS: RB-57 (HATS) 8/72, 11/72, 2/73, 5/73, 7/73
1C-130 (HATS) 8/72, 11/72, 2/73, 5/73, 7/73

7. RANGE(S) STATUS: ☒ HOLD 23 MAR 72 REFLECTED ON SCHEDULE 3-30-72 ☐ DISAPPROVED (DATE)
(DATE)
8. RANGE(S) CONCURRENCE: RECEIVED BY: [Signature] AIRCRAFT PROGRAM REPRESENTATIVE/NSC

HEAD, MSC/EOAPO PLANNING & SCHEDULING

Bygones

EXHIBIT D

	<u>quantity</u>	<u>delivery date(s)*</u>
1. DCP TYPE 1. (two inputs; digital-serial, analog)	<u>10</u>	
DCP TYPE 2. (two inputs; digital-serial, digital-parallel)	<u> </u>	
DCP TYPE 3. (three inputs; digital-serial, digital-parallel, analog)	<u> </u>	
TOTAL DCP's	<u>10</u>	
SPARE MODULES:		
TRANSMITTER CARD	<u>1</u>	
PROGRAMMER CARD	<u>1</u>	
ANALOG CARD	<u>1</u>	
DIGITAL-PARALLEL CARD	<u> </u>	
OTHER (SPECIFY) _____		

FIELD TEST SET	<u>1</u>	

* If no delivery is specified above, a delivery date of no later than 15 August 1972 will be assumed.

II. DATA FORMAT REQUESTED: (To be supplied as available)

1. PUNCHED CARD [] 2. MAGNETIC TAPE [xx] 3. COMPUTER LISTING [x]

4. OTHER (specify) _____

